

**SECTION 01720****PROJECT RECORD DOCUMENTS****PART 1 GENERAL****1.01 DESCRIPTION**

- A. Scope of Work: For contracts where the work is performed at an on-site location maintain one record copy of:
  - 1. Record Drawings. Record Drawings as used herein shall mean a drawing that accurately records constructed improvements and any field changes.
  - 2. Record Specifications.
  - 3. Addenda.
  - 4. Change Orders and other modification of the contract.
  - 5. Engineer's written orders or instructions.
  - 6. Approved Shop Drawings, Product Data and Samples.
  - 7. Field Test records.
  - 8. Construction photographs.
  - 9. As built dimensions and elevations as recorded by the Contractor's Florida Licensed Professional Surveyor and Mapper (PSM) on a daily basis.
  - 10. Field Book. Survey Field notes taken by the Florida Licensed Professional Surveyor and Mapper's survey crew (copy provided to the Engineer on a monthly basis).
- B. The records listed above are to be made available to the Engineer at all times for all projects.
- C. Related Requirements Described Elsewhere:
  - 1. Section 01340: Shop Drawings, Product Data and Samples.

**1.02 MAINTENANCE OF DOCUMENTS AND SAMPLES**

- A. Maintain documents in a clean dry, legible, condition and in good order. Do not use record documents for construction purposes.

**1.03 REQUIRED MEASUREMENTS**

- A. Set-up and Verification: The Contractor's Florida Licensed Professional Surveyor and Mapper is required to recover the design baseline and verify the elevations and coordinates on a regular basis as needed.
- B. The Contractor is required to have a level instrument setup next to the construction site in order to control the vertical alignment of the pipe installation

prior to trench backfilling. The level shall be setup daily for use by the surveyor, Contractor's foreman and Department Engineer/Inspector. Any underground construction work that does not have a level properly setup will be stopped by the Department Engineer/Inspector.

- C. The Contractor is required to have a survey crew record the field information on a daily basis when there is underground pipe installation. The survey crew shall be on-site as needed to record and verify the information before it is covered. Any underground construction work that does not have the information recorded by a survey crew will be stopped by the Department Engineer/Inspector. The Engineer/Inspector has the authority to order re-excavation of work that was covered without accurate survey measurements.
- D. Field Book Information: The Florida Licensed Professional Surveyor and Mapper is required to have his crews make daily visits to the project site during underground pipe installation work to perform field measurements of the Contractor's daily installations. This information shall be recorded in field books. Copies of the field notes are required to be provided to the Construction Manager on a monthly basis. The surveyor's field notes of the surveyor shall be submitted to the Department along with partial as-builts plans (signed and sealed) on a monthly basis as a condition of payment.

#### 1.04 PROJECT RECORDS

- A. During the life of the Contract the Contractor shall retain the services of a Florida Licensed Professional Surveyor and Mapper (PSM) who shall maintain daily records of the installation, including all deviations from Plans and Specifications and for the purposes of preparing and submitting to the Department an as-built/record survey in compliance with:
  - 1) Florida Statutes Chapter 472.027.
  - 2) Florida Administrative Code Chapter 5J-17.050, 5J-17.051 and 5J-17.052
  - 3) As further required by these Contract Documents.
- B. The Measure and Recording of all information required in Subsection A above for all projects concurrently with construction progress. The services of the Florida Licensed Professional Surveyor and Mapper for the project shall be retained by the Contractor prior to the issuance of the Notice to Proceed. A letter from the Florida Licensed Professional Surveyor and Mapper shall be provided at the preconstruction meeting indicating that the Contractor has secured his services to perform all survey work for the duration of the project and prepare final as-builts plans.
- C. Submit redlines, partially completed as-built plan sheets and fully complete as-built Plan sheets and certified copies of field book information to include raw data of the measurements all as required by and satisfactory to, the Engineer as

prerequisite for the acceptance of monthly payment applications.

- D. Label each document "PROJECT RECORD" in neat large printed letters.
1. Record all information for pipeline projects and on-site projects concurrently with construction progress.
  2. Do not conceal any work until as-built information is recorded by the Contractor's surveyor.
  3. All locations for future connections or tie-ins shall be left unburied and uncovered until the Contractor's PSM measures and records the as-built information.
    - a. All as-built and inspector information is to be made available to the Engineer on a daily basis for inclusion in the M-D WASD records.
  4. Restrained pipe, end line valves, thrust blocks shall be left uncovered for the last complete length. Inline valves and tees shall be left exposed for 1 length on both sides plus the face end. Measure and record the elevation, horizontal and vertical alignment, and the inclination for these items.
  5. For all projects, the Contractor's PSM shall maintain exact and extensive records of any deviations from Drawings and Specifications. These records shall be satisfactory to the Engineer, whose decision shall be final, and sufficient to allow the production of accurate as built Plans which correctly and completely portray the work as constructed.
  6. For all projects, the Contractor's PSM shall record data as follows during the entirety of construction.
    - a. For facility (e.g. a water or sewage plant, pumping station, or similar site, if so designated by M-D WASD) projects, record as-built dimensions and elevations every twenty-five feet (25') or portion thereof along pipeline and at every abrupt change in direction of the new line.
    - b. For pipeline projects, constructed in the public right-of-way, record dimensions and elevations every one hundred feet or portion thereof along the pipeline and at every horizontal and vertical change in direction.
    - c. In all cases, record locations and elevations for each valve, fitting, service line, fire hydrant, water sampling point, utility poles adjacent to the proposed line, overhead wires crossing the ditch line (approximate height above grade) and other appurtenances along the pipeline.
    - d. The identity, dimensions, location, and elevation of any existing utility crossing the proposed line and so immediately adjacent to the new line as to be exposed by the excavation, shall also be

recorded. Locate, excavate, expose, and record the same data for any utility shown in the plans whose proximity to the proposed pipeline could affect the certification requirements of the new installation. Note that in instances of a very wide ditch due to ground conditions, the recording of data for adjacent, paralleling utilities shall only be required for lines which come within three feet of the outside of the pipe being installed, unless otherwise ordered by the Engineer who's decision shall be final.

- e. Without exception, for all thrust blocks, the top elevation, outer dimension, thickness of the block, length and location of any sheet piling, if used, shall be recorded by the Contractor's PSM.
- f. Specific locations and elevation of equipment, the buildings and miscellaneous items installed inside them shall be recorded as applicable and as required by the Engineer.
- g. Without exception, where the substitution of another piece of equipment for that shown on the Plans has been allowed, the footprint, clearance, and elevation dimensions shall be recorded by the Contractor's PSM and these changes shall be accurately and thoroughly portrayed on the as-built plans.
- h. Contractor's Licensed Surveyor shall prepare from the field data, as-built record drawings showing correctly, completely, and accurately the installation, embracing all changes and deviations made during construction, including all construction variances, to reflect the work as it was constructed.
- i. Record Drawings shall be prepared as specified hereinafter.
- j. Record Drawings and five (5) copies shall be signed and sealed by the Surveyor and shall be submitted to the Department for the Engineer's review within ten (10) calendar days following the completion date of successful pressure testing of all mains and appurtenances under this Contract.
- k. If the Engineer determines that the Drawings are not acceptable, they will be returned to the Contractor with a cover letter noting the deficiencies and/or reasons for the disapproval. Contractor shall have ten (10) calendar days to correct all exceptions taken by the Engineer and resubmit as-built record drawings to the Engineer for final acceptance.

#### 1.05 MECHANICAL, STRUCTURAL AND ELECTRICAL AS-BUILT RECORDS

- A. The mechanical, structural and electrical information on as-builts for Pump Stations and Plant work shall be reviewed and signed and sealed by a Florida Registered Professional Engineer when designated as the responsible party for the corresponding portion of the as-builts.
- B. The Engineer shall verify that all mechanical, structural and electrical information on the as-built the work was constructed as designed on the Design Plans. Any deviation shall be noted and approved by the Department.
- C. Capital Improvement Projects contracted by the Department shall be certified by

the Construction Manager or Engineer of Record that the work was constructed as designed on the Design Plans with any deviation shall be noted and approved by the Department.

#### 1.06 PROPERTY BOUNDARIES

- A. The Florida Licensed Professional Surveyor and Mapper shall establish and maintain throughout the construction the property boundaries of pump stations and easements. The surveyor shall verify that the work of the project does not encroach into adjacent (abutting) property. Property corners lost during construction shall be reset at the first opportunity to ensure that the work is done within the designated limits.
- B. The as-builts for pump stations or other Water and Sewer Department above ground facilities in an easement or designated property shall show all property corners, setbacks and dimensions of the structure and appurtenances. All information required of a boundary survey shall be contained on the as-built plans. A boundary survey signed and sealed by a PSM shall be a part of the as-built plans.

#### 1.07 DRAWINGS

- A. During the life of the Contract, maintain records of all deviations from the Plans and Specifications and prepare therefrom As-Built Record Drawings showing correctly and accurately all changes and deviations made during construction to reflect the work as it was actually constructed. It is the responsibility of the Contractor to check the As-Built Record Drawings for errors and omissions prior to submittal to the Department and certify in writing that the As-Built Record Drawings are correct and accurate, including the actual location of all piping, exposed and internal piping, and electrical/signal conduits in or below the concrete floor. Indicate the size, depth and voltage in each conduit.
- B. Legibly Mark To Record Actual Construction: All data as previously specified for all installations by the Contractor's PSM. For on-site structures and facilities work the Contractor's Florida Registered Land Surveyor shall record:
  - 1. Depths of various elements of foundation in relation to finish first floor and datum plane.
  - 2. All exposed and underground piping and ductwork with elevations and dimensions and locations of valves, pull boxes, etc. Changes in location. Horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent reference points, plant survey grids, property lines and similar.
  - 3. Location of internal utilities and appurtenances concealed in the construction shall be referenced to visible and accessible features of the structure. Air conditioning ducts with locations of dampers, access doors, fans and other items needing periodic maintenance.
  - 4. Field changes in dimensions and details.
  - 5. Changes made by Engineer's written instructions or by Change Order.

6. Details not on original Contract Drawings.
  7. Equipment and piping relocations.
  8. Major architectural and structural changes in structures, including tanks.
  9. Architectural schedule changes according to Contractor's record and shop drawings.
  10. Record Drawings shall be prepared as specified hereinafter.
- C. Specifications and Addenda: Legibly mark each section to record:
1. Manufacturer, trade name, catalog number and Supplier of each product and item of equipment actually installed.
  2. Changes made by Engineer's written instructions or by Change Order.
- D. Approved Shop Drawings: Provide record copies for system diagrams and drawings together with each element of process equipment, piping, electrical system and instrumentation system.

#### 1.08 SUBMITTALS

- A. Accompany submittal with transmittal letter in duplicate, containing:
1. Date
  2. Project title and number
  3. Contractor's name and address
  4. Title and number of each Record Document
  5. Signature of Contractor or his authorized representative.
- B. Record Drawings with five copies which have been signed and sealed by the surveyor shall be submitted to the M-D WASD for the engineer's review. Drawings shall conform to recognized drafting standards. As-built drawing shall be submitted on 24-inch by 36-inch bond paper. These materials shall be submitted to the MD-WASD for the Engineer's review as a prerequisite for payment during the course of construction as previously specified and final, complete sets of documents within ten calendar days following the completion date of successful testing of all mains, equipment and appurtenances under this Contract. Final payment will not be made until the five sets of as-built record drawings (with AutoCAD file) and five sets of prints have been approved and accepted by the Engineer.
1. In cases where a portion of a pipeline system or parts of a process system are put into service, the above conditions shall apply for the in-service portion and monthly payments shall be withheld until the as-built drawings are accepted by the Engineer.
  2. As-Built Record Drawings, as prepared by the Contractor's Florida Licensed Professional Surveyor and Mapper and submitted by the Contractor, shall comply with following criteria and standards:
    - a. Title block must show the Contract or Project Title (as applicable); Contract number; MD-WASD ER, PCTS, RPQ numbers; Contractor's name; Engineer of Record's name;

- Surveyor's name and address; date; location; and where appropriate to the work, size and type (i.e. water main, sanitary gravity main, sanitary force main) of main.
- b. Baselines or centerlines must be tied to section corners, monument line and right-of-way lines.
  - c. Pipeline must be tied to baseline or centerline with stations and offsets.
  - d. Baselines or centerlines must show bearings or deflection angles, or delta, radius, chord and arc length for curves.
  - e. Show all horizontal curve data, including point of curvature (PC) and point of tangency (PT) stations or radial bearing.
  - f. Stationing must be the same as shown on construction drawings and must be tied to Section corners, centerline intersections and all other pertinent control points within the Project. All such pertinent points shall have their stationing shown and where there is dual stationing for a point, both stations shall be called out.
  - g. Identify all streets by name or number and show stationing at all intersecting streets.
  - h. Refer to vertical datum plane and identify the location, elevation and source supplying the bench mark used.
  - i. Tie easement lines to survey baseline or platted centerline and right-of-ways.
  - j. Show horizontal and vertical locations of all fittings, deflections, or at any significant change of direction, and at a maximum of 100-foot intervals along the pipeline for off-site (e.g. in the public right-of-way) and at maximum 25- foot intervals for on-site (e.g. on a facility such as a pump station or plant work).
  - k. On all pipe fittings of 36-inch diameter or over, (i.e. tees bends, crosses, wyes, increasers/decreasers, bevels) elevations must be taken at the end and center points to reflect the true elevation and altitude of the fitting.
  - l. Elevations of natural ground or pavement over the pipeline must be shown at each position where the pipe elevation is shown and at intervening high and low points.
  - m. Manhole rim and valve box rim elevations must be shown.
  - n. Show all invert and bottom elevations in manholes and valve vaults or boxes. Show all invert and bottom elevations together with pipe size, and where it can be determined, pipe material, for existing structures having pipes which cross the pipe line being constructed.
  - o. Locations and elevations together with diameter, thickness and material of all casings.
  - p. Location, top and bottom elevations of all sheeting left in place.
  - q. Coordinate values used inside plants shall be the local, MD-WASD established coordinate systems referenced to the property boundary.
  - r. State plane coordinate values for all new valves and manholes; on existing valves and manholes at points of connection or closest to the point of connection and the point of connection

itself.

3. Certification: The Contractor shall certify on as-built record drawings all other actual constructed details and information as may be required by the MD-WASD including but not limited to:
  - a. Pipeline must be identified by type of pipe material, manufacturer, type of joint and type of joint restraint.
  - b. Valves shall be identified by size, type, end condition; and n valves 16-inch or larger, the manufacturer's name and number of turns required to open or close the valve.
  - c. Show calculated pipeline percent of grade between manholes of gravity systems.
  - d. Types and sizes of sheeting and piling together with measured and complete; location, dimensional, , and elevation data on any pile caps, tie backs, anchors, whalers or other appurtenant structures left in place.
- C. Digital Records: The M-D WASD requires the submittal of as-built drawings in AutoCAD for Windows format and in PDF format. Graphical information contained on magnetic media shall be the same as provided on plan sheets. Digital Records shall be delivered to the WASD Project Manager containing a list of all files and data being provided. The AutoCAD file shall be compatible with the Department system and capable of being uploaded without external reference files.

## **PART 2 PRODUCTS**

NOT USED

## **PART 3 EXECUTION**

NOT USED

**END OF SECTION**